

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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In re Application of

Makoto TANIGUCHI, et al.

Group Art Unit: 1755

Serial No. 09/047,717

Examiner: C. Shosho

Filed: March 25, 1998

Docket No.: U-011678-8

For: INK COMPOSITION COMPRISING CATIONIC, WATER-SOLUBLE RESIN

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Honorable Commissioner of Patents and Trademarks
United States Patent and Trademark Office
Washington, D.C. 20231

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GROUP 1700

Sir:

DECLARATION UNDER 37 CFR 1.132

I, Hitoshi OHTA, the undersigned, do hereby declare:

1. THAT I am a solo-inventor of the invention described and claimed in the above patent application.

2. THAT the following experiments were conducted under my direction and control:

(1) Preparation of ink sets

(a) Color ink sets 1 to 9 and Black ink 1 to 3

Color ink sets 1 to 9 and Black ink 1 to 3 described in the specification of the above application on page 21, line 19 to page 24, line 24 were provided.

(b) Color ink set 9 and Black ink 4

To 10 g of 25% aqueous solution of the formate of PAA-Me, Me (dimethyl polyallylamine) (Mw: 890) prepared in Example 9 of the specification of the above application, 2 g of PAA-L (trade name, free type of polyallylamine, Mw: 10,000, manufactured by Nitto Boseki Co., Ltd.), 6 g of C.I. Direct Black 195, 0.7 g of potassium hydroxide, 10 g of glycerin, 10 g of diethylene glycol monobutyl ether, and 0.8 g of Surfynol 465 as a nonionic surfactant were added. Ultrapure water was further added thereto until the total amount reached 100g to give Black ink 4.

Yellow ink 10, magenta ink 10, and cyan ink 10 were prepared in the same manner as described for Black ink 4 above, except that 2.5 g of C.I. Direct Yellow 132, 2 g of C.I. Acid Red 249, or 4 g of C.I. Direct Blue 199 was used instead of C.I. Direct Black 195. These three inks were used as Color Ink Set 9.

(2) Evaluation

The ink set thus provided were evaluated with respect to lightfastness as follows. The printer used was MJ-5000C, manufactured by Seiko Epson Corporation. A full color image was printed on plain paper (tradename; Zerox-P, manufactured by Fuji Xerox Co., Ltd.) of size A4 as a recording medium. The combinations of a color ink set and a black ink were as shown in the following table. The prints were evaluated for lightfastness by the whole-day method in the sunlight test according to JIS L 0814. The results were evaluated according to the following criteria.

Grade A: No change in grade of blue scale as compared with the ink with the cationic water-soluble resin not added thereto,

Grade B: a change in grade of blue scale of less than 1,

Grade C: a change in grade of blue scale of 1 or 2,

Grade D: a change in grade of blue scale of more than 2.

The results were as shown in the following table.

Test No.	Color ink set	Black ink	Lightfastness
I	1	2	A
II	2	2	C
III	3	3	A
IV	4	3	A
V	5	3	C
VI	6	1	A
VII	7	2	C
VIII	8	-	-(*)1
IX	9	3	D
X	10	4	D

*1: No ink could be ejected from about 50% of nozzles, and droplet trajectory directionally problem was found on ink ejected from 30% of nozzle, yielding no good print. This made it impossible to perform the evaluation.

3. I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Dated: September , 2003

Hitoshi OHTA